

IN THE SPECIFICATION:

Beginning on page 1, paragraph [002] and continuing to page 2.

BACKGROUND

[002] In the field of underground mining, head lamps are needed that can last for the entire duration of a working shift without battery replacement. Some prior art underground mining head lamps utilized a head lamp on a miner's helmet connected by wire to an acid battery worn on a worker's belt. Such an arrangement was not only bulky and inconvenient, but it also lead to creating of sparks and flame, and is blamed by some as the cause of some mining fires. The leakage of acid from batteries may also result in personal injuries. Alternative tungsten light bulb mining lamps are undesirable because they suffer from a short lifetime.

SUMMARY

A useful underground mining headlamp may be advantageous if it is compact, light weight, has a light source that has a long useful life, produces little heat, and does not create sparks or flame. Various structures and components of an underground mining head lamp featuring a semiconductor light source are disclosed. Those structures include a semiconductor light source, a light beam shaping system, a constant current control circuit, a magnetic switch, rechargeable battery pack, stripe to hold battery pack, and a battery charger to charge battery pack.

BRIEF DESCRIPTION OF THE DRAWINGS

[003] Figure 1 depicts an example mining helmet with an example mining light installed.

[004] Figure 2 depicts a cross sectional view of an example mining light.

[005] Figure 3 depicts an example assembly of battery packs and battery charger.

[006] Figures 4, 5 and 6 depict example semiconductor light sources.

[007] Figure 7 depicts an example electrical connection block diagram.

SUMMARY

[008] A useful underground mining headlamp may be advantageous if it is compact, light weight, has a light source that has a long useful life, produces little heat, and does not create sparks or flame. Various structures and components of an underground mining head lamp featuring a semiconductor light source are disclosed. Those structures include a semiconductor light source, a light beam shaping system, a constant current control circuit, a magnetic switch, rechargeable battery pack, stripe to hold battery pack, and a battery charger to charge battery pack.